

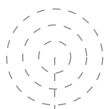


# AVOX

Antares Vocal Toolkit



Owner's Manual



the  
worldwide  
standard in  
vocal.  
processing  
tools

©2005 Antares Audio Technologies. All rights reserved. Certified Isinglass-free™

All trademarks are the property of their respective owners.

Antares Audio Technologies 231 Technology Circle, Scotts Valley, California 95066 USA

web: [www.antarestech.com](http://www.antarestech.com)

Printed in USA Rev 1.0 08/05 PN 35030-0805-M01

## The Obligatory Legal Mumbo-Jumbo

The AVOX software and this User's Manual are protected by copyright law. Making copies, adaptations, or derivative works without the prior written authorization of Antares Audio Technologies, is prohibited by law and constitutes a punishable violation of the law.

Antares Audio Technologies retains all ownership rights to the AVOX software and its documentation. Use of AVOX software is limited by the following license agreement.

Please carefully read all the terms and conditions of this license agreement. At the time of installation of the AVOX software you will be presented with a copy of the agreement and asked whether or not you agree to it. Continuing with the installation process beyond that point constitutes such agreement.

### **AVOX License Agreement**

Antares Audio Technologies grants you a non-transferable, non-exclusive license to use AVOX software under the terms and conditions stated in this agreement. Use of AVOX indicates your agreement to the following terms and conditions.

#### **License**

You may:

1. Use AVOX software on only one computer at a time. (Moving your AVOX license from computer to computer requires authorization via an iLok smart key.)

You may not:

1. Make copies of AVOX software or of the user manual in whole or in part except as

expressly provided for in this agreement. Your right to copy AVOX software and the user manual is limited by copyright law. Making copies, verbal or media translations, adaptations, derivative works, or telecommunication data transmission of AVOX software without prior written authorization of Antares, is prohibited by law and constitutes a punishable violation of the law.

2. Make alterations or modifications to AVOX software (or any copy) or disassemble or decompile AVOX software (or any copy), or attempt to discover the source code of AVOX software.
3. Sub-license, lease, lend, rent, or grant other rights in all or any portion of AVOX software (or any copy) to others.

### **Term of the Agreement**

This agreement is effective until terminated by you or Antares. You may terminate the agreement at any time by notifying Antares and destroying all copies of the manual, and erasing all AVOX software from all machine-readable media, whether on-line or on archival copies.

In the event of breach of any of the terms of this agreement, you shall pay the attorney's fees of Antares that are reasonably necessary to enforce the agreement plus resulting damages.

### **Limited Warranty and Disclaimer**

AVOX SOFTWARE AND ACCOMPANYING MATERIALS ARE PROVIDED "AS IS"

WITHOUT WARRANTY OF ANY KIND,  
EITHER EXPRESS OR IMPLIED, INCLUDING,  
BUT NOT LIMITED TO, THE IMPLIED  
WARRANTIES OF MERCHANTABILITY AND  
FITNESS FOR A PARTICULAR PURPOSE.

Antares Audio Technologies does not warrant  
that the functions contained in the program  
will meet your requirements. The entire risk as  
to the use, quality, and performance of AVOX  
software is with you.

SOME JURISDICTIONS DO NOT ALLOW  
LIMITATIONS ON HOW LONG AN IMPLIED  
WARRANTY LASTS, SO THE ABOVE  
LIMITATION MAY NOT APPLY TO YOU. THIS  
WARRANTY GIVES YOU SPECIFIC LEGAL  
RIGHTS. YOU MAY ALSO HAVE OTHER  
RIGHTS WHICH VARY FROM JURISDICTION  
TO JURISDICTION.

**Limitation of Liability**

IN NO EVENT WILL ANTARES BE LIABLE  
FOR ANY DAMAGES, INCLUDING LOSS  
OF DATA, LOST PROFITS OR OTHER  
SPECIAL, INCIDENTAL, CONSEQUENTIAL  
OR INDIRECT DAMAGES ARISING  
FROM THE USE OF AVOX SOFTWARE  
OR ACCOMPANYING MATERIALS. THIS  
LIMITATION WILL APPLY EVEN IF ANTARES  
OR ITS AUTHORIZED AGENT HAS BEEN  
ADVISED OF THE POSSIBILITY OF SUCH  
DAMAGE. YOU ACKNOWLEDGE THAT THE  
LICENSE FEE REFLECTS THIS ALLOCATION  
OF RISK. SOME JURISDICTIONS DO NOT  
ALLOW LIMITATION OR EXCLUSION  
OF LIABILITY FOR INCIDENTAL OR  
CONSEQUENTIAL DAMAGES, SO THE  
ABOVE LIMITATION MAY NOT APPLY TO  
YOU.

Whew! Now that that's over, let's get on to  
the good stuff.

# Contents

	Welcome	1
Chapter 1	Getting Started	3
Chapter 2	Introducing AVOX	5
Chapter 3	THROAT Physical Modeling Vocal Designer	7
Chapter 4	DUO Vocal Modeling Auto-Doubler	17
Chapter 5	CHOIR Vocal Multiplier	21
Chapter 6	PUNCH Vocal Impact Enhancer	23
Chapter 7	SYBIL Variable Frequency De-Esser	25
	Index	27





# Welcome!

On behalf of everyone at Antares Audio Technologies, we'd like to offer both our thanks and congratulations on your decision to purchase the AVOX Antares Vocal Toolkit, a suite of uniquely powerful DSP tools for creating spectacular vocal tracks.

As an AVOX owner, you are entitled to receive notification of any software updates, technical support, and advance announcements of upcoming products. But we can't send you stuff unless we know who and where you are. So please, register.

At Antares, we are committed to excellence in quality, customer service, and technological innovation. With your purchase of AVOX, you have created a relationship with Antares which we hope will be long and gratifying. Let us know what you think. You can count on us to listen.

Again, thanks.

The Whole Antares Crew

## Technical Support

In the unlikely event that you experience a problem using AVOX, try the following:

1. Make another quick scan through this manual. Who knows? You may have stumbled onto some feature that you didn't notice the first time through.
2. Check our web page for tips, techniques, or any late-breaking information:

[www.antarestech.com](http://www.antarestech.com)

3. Consult our searchable knowledgebase at:

<http://www.antarestech.com/support/index.html>

4. Call your local Antares dealer.







# Chapter 1: Getting Started



## How To Use This Manual

The plug-ins that make up the AVOX suite

have been designed with clear, consistent, friendly user-interfaces. If you come to AVOX with previous vocal processing experience, you will find that most of their functions are self-evident and are extraordinarily easy to use. However, since some of the AVOX tools do things that have never been done before, a few aspects of their user-interfaces may not be immediately obvious.

Consequently, we encourage you to at least scan each of the individual plug-in's chapters for descriptions of their various parameters. In particular, THROAT offers an entirely new approach to vocal processing, offering capabilities that have simply never before existed in a DSP plug-in. We strongly suggest that you read Chapter 3 in its entirety to gain an understanding of what THROAT can do.

If you just can't wait to get some sound going, feel free to load up some vocal tracks and play around with the various AVOX plug-ins. (Be sure to check out THROAT's collection of factory presets. They'll give you a good idea of what THROAT is capable of as well as providing inspiration for your own creations.) Then come back and dig into the details.

## The Contents Of This Manual

### Chapter 1: Getting Started

The chapter you are reading.

### Chapter 2: Introducing AVOX

This chapter provides an overview of the tools that make up the AVOX plug-in suite.

### Chapter 3: THROAT Physical Modeling Vocal Designer

This chapter is reference information for all of the controls used in the THROAT interface.

### Chapter 4: DUO Vocal Modeling Auto-Doubler

This chapter is reference information for all of the controls used in the DUO interface.

### Chapter 5: CHOIR Vocal Multiplier

This chapter is reference information for all of the controls used in the CHOIR interface.

### Chapter 6: PUNCH Vocal Impact Enhancer

We're guessing that by this point you can predict what this chapter is about.

### Chapter 7: SYBIL Variable Frequency De-Esser

Yup.

## Installing AVOX

Any unique instructions for installing AVOX for your specific plug-in format will be located in the AVOX Read Me file that accompanies the plug-ins. This file may also contain any last-minute AVOX information that didn't make it into this manual.

AVOX is designed to work with a wide variety of digital audio applications. Please refer to your host application's user manual for more information on installing and using plug-ins.

## Authorizing AVOX

Authorization is the process by which the AVOX software is allowed to run on your computer. Detailed instructions covering the available authorization options will be found in the file “Authorization Read Me” which is included on the installation CD ROM or with your software download.



**Note:** *When initially installed, this software will run for ten days without authorization.*

So even if you can't authorize it right away you can still use your software in the meantime. (During this period, click the “Continue” button whenever you are presented with the Trial Period screen at launch.) But don't procrastinate too long. After those ten days are up, you will no longer be able to launch this software until it's authorized.

# Chapter 2: Introducing AVOX

The heart of any great song is a great vocal sound. With the AVOX Antares Vocal Toolkit, we've combined five state-of-the-art vocal processing modules that open up an entirely new world of vocal processing capabilities. AVOX gives you the power you need to create stunning vocal tracks in any musical style as well as design unique vocal effects for audio post-production applications.

In the following chapters we'll deal with each AVOX tool in turn, but first let's take a brief look at what's in AVOX and how you might use the tools in combination.

## AVOX Overview

The AVOX Antares Vocal Toolkit includes:

**THROAT Physical Modeling Vocal Designer** THROAT is a revolutionary new vocal tool that lets you process a vocal through a meticulously crafted physical model of the human vocal tract. THROAT begins by neutralizing the effect of the original singer's vocal tract and then gives you the ability to specify the characteristics of the modeled vocal tract.

THROAT's controls allow you to modify the voice's glottal waveform as well as globally stretch, shorten, widen or constrict the modeled vocal tract. For even more detailed control, THROAT's graphical Throat Shaping display allows you to individually adjust the position and width of five points in the vocal tract model, from the vocal chords, through the throat, mouth and out to the lips. Finally, THROAT's Breathiness controls let you

add variable frequency noise to the model, resulting in a range of vocal effects from subtle breathiness, to raspiness, to a full whisper.

While THROAT has been designed to allow subtle modifications to a voice's vocal quality, the range of the controls also allows the creation of vocal tract models well beyond the limits of physical human anatomy, offering the possibility of vocal characteristics that are simply unattainable by any other means.

**DUO Vocal Modeling Auto-Doubler** DUO automatically generates a doubled vocal part from an existing vocal. In addition to allowing programmable variation in pitch, timing and vibrato depth, for even more realism, DUO also includes a simplified version of THROAT's vocal modeling to provide timbral variation for the doubled part. DUO's output section gives you independent control of the level and stereo position of the original and doubled voices.

**CHOIR Vocal Multiplier** Neither a harmonizer nor a conventional chorus effect, CHOIR is a unique processor that actually turns a single voice into 4, 8, 16, or 32 distinct individual unison voices, each with its own pitch, timing and vibrato variations. The voices can, if desired, be spread across the stereo spectrum. Assign an instance of CHOIR to each of four voices singing four-part harmony and voilà, instant choir.

**PUNCH Vocal Impact Enhancer** PUNCH is a unique processor that, as its name implies, lets you give your vocal more dynamic impact, allowing it to cut through a dense mix with clarity and power.

**SYBIL Variable Frequency De-Esser** SYBIL tames vocal sibilance with threshold, ratio, attack and decay controls as well as a variable sidechain high pass frequency to match any vocal performance.

## AVOX Processing Guidelines

While it might seem to be convenient to consolidate all of the AVOX functions in one integrated plug-in, some of the AVOX functions use quite a bit of processing power. By organizing them as separate plug-ins, you can choose to instantiate only those you need for each particular vocal track, thereby using only as much of your computer's DSP power as you absolutely need.

While it's not likely that you'll be using all five plug-ins on every track, it is likely that you'll often be using more than one. When that's the case, keep the following in mind:

### Normal Practice

- In general, you should progress from the cleanest possible source vocal through successive stages of processing. THROAT, DUO and CHOIR in particular are designed to process pitched monophonic voices and will function much more effectively with clean input signals. Effects like reverb and conventional chorus or flanging should typically be applied after processing by the desired AVOX plug-ins.
- If a track requires de-essing, use SYBIL as the first of the AVOX plug-ins.
- THROAT should be either first in line (fed by a nice clean signal) or second after SYBIL.
- If you will be using PUNCH, it should come after SYBIL and/or THROAT.
- If you will be using DUO or CHOIR, they should typically be at the end of the AVOX processing chain.

### Special Cases:

- While you will usually choose between DUO or CHOIR, you can use them together for a really huge vocal section. Assign DUO to your track and pan the original and doubled voices to opposite tracks. Then assign separate instances of CHOIR to each of the two tracks. Humongous!
- If you will be using a harmonizer to generate harmonies from a single vocal line, start with SYBIL (if necessary) and then THROAT and then feed its output to your harmonizer. Assign each of the harmonizer's outputs to individual tracks and use DUO or CHOIR on each track to create a vocal group of the size of your choice. If desired, PUNCH can be used on THROAT's output or on the individual harmonizer outputs prior to DUO or CHOIR.
- If you have a vocal with problematic vibrato (either too much or too little), you can use DUO for vibrato modification. Assign DUO to the track and use only the doubled output. Set all parameters to their minimum effect and use the Vibrato function to adjust the performance's vibrato depth. See Chapter 4 for more details.
- For maximum control of the timbre of doubled voices (at the cost of increased CPU requirements), assign DUO to your vocal and pan the original and doubled voices to opposite tracks. Then assign an independent instance of THROAT to each part and create a unique timbre for each voice.

But all that being said, always feel free to ignore any of the above suggestions. The AVOX tools offer entirely new realms of creative possibilities. There is no wrong way.

Now on to the details.

# Chapter 3: THROAT Physical Modeling Vocal Designer



**T**HROAT is a revolutionary new vocal tool that lets you process a vocal through a meticulously crafted physical model of the human vocal tract. THROAT begins by neutralizing the effect of the original singer's vocal tract and then gives you the ability to specify the characteristics of the modeled vocal tract.

THROAT's controls allow you to modify the voice's glottal waveform as well as globally stretch, shorten, widen or constrict the modeled vocal tract. For even more detailed

control, THROAT's graphical Throat Shaping display allows you to individually adjust the position and width of five points in the vocal tract model, from the vocal chords, through the throat, mouth and out to the lips. Finally, THROAT's Breathiness controls let you add variable frequency noise to the model, resulting in a range of vocal effects from subtle breathiness, to raspiness, to a full whisper.

While THROAT has been designed to allow subtle modifications to a voice's vocal quality, the range of the controls also allows the

creation of vocal tract models well beyond the limits of physical human anatomy, offering the possibility of vocal characteristics that are simply unattainable by any other means.

In order to understand what THROAT is doing and how you can use it to process your vocal tracks, it helps to know how our throats actually work to create what we perceive as unique vocal qualities.

Vocal production starts with the vocal chords. Air from our lungs is forced through the vocal chords, causing them to vibrate. The contour of this vibration is the glottal waveform. The actual shape of the waveform is affected by each individual's anatomy as well as the pressure applied to the vocal chords. From there, the voice is propagated through the throat, the mouth and out through the lips. It is the shape of these structures, both their length and width, that create the resonant characteristics that combine with the glottal waveform to define a unique vocal identity.

With THROAT, for the first time, you have individual control over each of the elements that go into creating a distinct vocal character. Whether you are a producer or engineer looking to subtly enhance a singer's performance, or a sound designer in pursuit of a totally new vocal effect, THROAT will give you creative capabilities that have simply never before existed.

## Controls

In order for THROAT to do the best possible job of modeling, it needs to know some basic things about the source audio. The following three controls are used to characterize the vocal that you will be processing:

### Vocal Range

Use this control to select the range of the track you will be processing. Choices include

Soprano Voice, Alto/Tenor Voice, Bass/Baritone Voice and Instrument (a general setting for anything that isn't actually a vocal). Matching the appropriate algorithm to the input results in faster and more accurate pitch detection and more accurate modeling.

To select vocal range, click on the Vocal Range pop-up and then select the desired range from the pop-up list.



**Note:** *Choosing the wrong Vocal Range (or just forgetting to set it at all) can result in compromised performance. Pay attention.*

### Source Glottal Waveform

The glottal waveform is the waveform produced by the vibration of the vocal chords. The range of an individual's possible waveforms is defined by their particular anatomy. Within that range, the waveform can change pretty dramatically depending on the performer's singing style. Imagine, for example, the progression from a breathy whisper, to a straight-ahead pop vocal, to hard rock or full-on operatic aria.

A lot of subtle factors influence the glottal waveform, but for ease of setting, we have characterized the choices as loudness. Typically, as loudness increases, so does the pressure applied to the vocal chords and with that change in pressure a corresponding change in glottal waveform.

When setting this control, select the loudness level (soft, medium, loud, intense) that most closely matches the performance you are processing. If you're not sure where your performance lies on this scale, don't worry. There is no need to obsess over subtle distinctions. If in doubt, just pick one. Once you have set up a model, you can always come back and try another setting and see if it makes a (positive) difference.

To select vocal type, click on the Vocal Type pop-up and then select the closest stylistic character of the vocal performance from the pop-up list.

### **Source Throat Precision**

If you've already been poking around the THROAT interface, you might be asking yourself, "What the heck is throat precision?" And a good question it is.

As it happens, this control works a bit differently than the previous two. Here, you're not being asked to tell THROAT something about the input, but instead to tell THROAT how precise to be in its attempt to calculate the characteristics of the input based on the type of modeling you intend doing (the choices being subtle, medium, or extreme).

So why not always leave it at "subtle"? Another good question. The answer is that THROAT's most precise analysis results in extremely accurate characterization of the source throat, which works well for models that are within the general range of human anatomy (i.e. subtle modifications). However, for more extreme models, the "subtle" setting can in some cases result in artifacts — most often a sort of "whistling." In those cases, such artifacts can often be reduced or eliminated by choosing a different setting for this control.

As a result, the strategy for this control should be to always start with "subtle" (which is the default) and, if a particular model results in artifacts (and you don't actually like those artifacts), change the precision one step at a time (i.e. to medium and then extreme) until you get the desired effect.

To select source throat precision, click on the Precision pop-up and then select the appropriate model type from the pop-up list.

The next two controls allow you to add a variety of breathiness effects to your modeled voice:

### **Breathiness Mix**

This control lets you select the amount of breathiness component mixed into your modeled voice. With a setting of 0, there will be no breathiness (apart from what might be in the original vocal). At a setting of 100, the model will be all breathiness, with none of the original vocal characteristic present at all. Intermediate settings will produce mixes of the original vocal and the breathiness component.

The sonic character of the breathiness will depend both on the articulation of the original vocal and, more dramatically, the setting of the Frequency control described below.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0.

### **Breathiness Frequency**

This control lets you set the high pass frequency of the breathiness component (i.e., the frequency above which the breathiness will be present). This frequency determines the audio range and character of the breathiness effect.

At high settings, the effect will be rather whispery and ethereal (depending, of course, on the original vocal and the Mix amount). At lower settings, the effect is more of a raspiness (again, depending on the mix). Experimentation is the best way to become familiar with the possibilities.

Command (Mac)/Control (PC) click the control to reset it to its default value of 4000 Hz.

The remaining controls are used to define the model vocal tract:

### Model Throat Length

The Throat Length control allows you to globally lengthen or shorten the modeled throat. Values above 1.00 represent a lengthening of the throat while values below 1.00 represent a shortening of the throat.

The actual values represent the percentage change in the throat length. For example, a value of 1.20 represents a 20% increase in throat length, while a value of 0.80 represents a 20% decrease in throat length.

Changes made to this control are reflected on the Graphic Throat Display described below. If you have used that display to create a custom throat contour, this control will preserve the overall contour while scaling it by the selected amount.



**Note:** While this control gives you the ability to radically change the throat length, keep in mind that the variation in the length of human vocal tracts is rarely more than about 25% in either direction. If you are looking for a “realistic” vocal characteristic, start with modest settings of this control. (As a visual reference, this range is indicated by color on the control scale.) More extreme settings can produce dramatic results, but probably not what anyone would call “realistic.”

Command (Mac)/Control (PC) click the control to reset it to its default value of 1.00.

### Model Throat Width

The Throat Width control allows you to globally widen or constrict the modeled throat. Values above 1.00 represent a widening of the throat while values below 1.00 represent a narrowing of the throat.

The actual values represent the percentage change in the throat width. For example, a value of 1.20 represents a 20% increase in throat width, while a value of 0.80 represents a 20% decrease in throat width.

Changes made to this control are reflected on the Graphic Throat Display described below. If you have used that display to create a custom throat contour, this control will preserve the overall contour while scaling it by the selected amount.



**Note:** Similar to the Length control above, this control gives you the ability to radically change the throat width. Again, if you are looking for a “realistic” vocal characteristic, start with modest settings of this control. (And again, this range is indicated by color on the control scale.) More extreme settings can produce dramatic results, but probably not what anyone would call “realistic.”

Command (Mac)/Control (PC) click the control to reset it to its default value of 1.00.

### Model Glottal Waveform

As was explained above in the Source Glottal Waveform section, the glottal waveform is the waveform produced by the vibration of the vocal chords. We used the Source Glottal Waveform control to help THROAT neutralize the effect of the original vocal's glottal waveform. The Pulse Width and Voice Type controls let you define the glottal waveform you want to model.

### Glottal Pulse Width

This control allows you to select the pulse width of the modeled glottal waveform. If you are at all familiar with analog synthesizers, you can think of this as being vaguely similar to the variable pulse width control on a square wave oscillator (and if you're not familiar with analog synthesizers, don't worry, just move the slider and listen to what happens).

You will find that the most dramatic timbral changes are usually found at the extreme ends of this control's range. If you're looking for realistic, stay in the middle 80% of the range.





**Important Note:** Keep in mind that this control interacts with the Glottal Voice Type control below. Each Voice Type sets a default Pulse Width that is associated with it. So if you set this control and then select a new Voice Type below, the value of this control will change to the new voice type's associated pulse width default. For that reason, it is usually best to select the Glottal Voice Type first and then make any desired adjustments to the pulse width.

Command (Mac)/Control (PC) click the control to reset it to its default value of 64.

### Glottal Voice Type

This control is the converse of the Source Glottal Waveform control described above. We used that control to tell THROAT the characteristic of the original performance. We use this control to tell THROAT what kind of characteristic we would like to model.

The choices here are the same as the choices for the Source Glottal Waveform control (i.e., soft, medium, loud, and intense). If you want to preserve the stylistic character of the original vocal, set this control to the same voice type as you set the Source Glottal Waveform (e.g., if you set Source Glottal Waveform to "soft," set this control to "soft").

As mentioned above, this control interacts with the Glottal Pulse Width control. Each of the Voice Types sets a default Pulse Width that is associated with it. Once a Voice Type is set, the pulse width may then be adjusted separately.



**Note:** Despite the value names (soft, loud, etc.), this control does not necessarily change the actual level of the signal (although the "intense" setting does sometimes result in some level gain). Its purpose is to model the glottal waveform that would result from the various styles of singing. If you want to adjust the level, use the Output Gain control described below.

To select vocal type, click on the Vocal Type pop-up and then select the desired stylistic character from the pop-up list.

### Graphic Throat Display

Okay, here's where the fun really starts.

The Graphic Throat Display allows detailed tweaking of the model throat. For the purpose of this control, the model throat is divided into four sections defined by five boundary points. For reference, these sections and boundary points are illustrated on the head graphic to the left of the Throat Shaping display. Point (1) starts at the vocal chords and the sections progress through the throat and the mouth out to the lips, which are at point (5).

The Throat Shaping display itself consists of two elements: the original throat plot and the model throat plot. The original throat plot is colored blue and is not user-changeable. It represents the original length and width of the four throat sections and serves as a reference relative to which changes to the model throat are made.

The model throat plot is colored red and includes five control points that can be grabbed and moved, effectively adjusting the length and width of individual sections of the throat.

Additionally, the background of the display is divided into two sections by color. The lighter blue central area represents the range of adjustments that are consistent with typical

human anatomy. As long as all control points and plot lines fall in this area, the results of your model will be more or less “realistic.” The darker blue area represents the range of adjustments that exceed the dimensions of typical human vocal tracts. When any control point or plot line falls in this area, the result may or may not sound like something that you might recognize as a human voice. The more points and/or plot lines fall in this area, the more extreme the effect.

When you open a new instance of THROAT, the default state of the Throat Shaping display is with the original and model throat plots exactly superimposed, indicating no difference. If you adjust the Throat Length and/or Throat Width sliders, you will see the entire red model plot move to reflect the changes. Length changes are self-evident. For width changes, any part of the model plot that lies above the original plot indicates a widening of the throat while any part of the model plot below the original plot indicates a narrowing of the throat.

Here are some things to consider when working with the Throat Shaping display:

- Point (1), which represents the vocal chords, serves as the anchor of the vocal tract. It can be adjusted for width but not length.
- When you move points (2), (3), or (4) horizontally, you are adjusting the relative lengths of the adjacent sections. For example, if you move point (3) to the right, you are lengthening the section between (2) and (3) while shortening the section between (3) and (4). The overall length of the throat model remains the same.
- Only by moving point (5) can you change the overall length of the model (apart from using the Throat Length slider, of course).
- As we’ve mentioned, if you’re looking

for “realistic” vocal characteristics, you would do well to start with relatively small adjustments that result in all control points and plot lines remaining in the central light blue area.

- In addition to the plot point positions, watch the contour of the plot lines connecting them. It’s possible to place the points in positions relative to each other that cause the plot lines to bow out towards the edges of the display (or even pin against an edge of the display). This will almost always result in artifacts of one sort or another. (Of course, if it’s artifacts you’re looking for, they may be just what you want.)
- When you have created a custom model contour, the Model Throat Length and Width controls will adjust the overall throat length and width while retaining (and scaling) your custom contour.
- Extremely striking effects can be created by moving plot points in realtime. You can do this manually (for one point at a time) or, much more powerfully, you can use your host’s automation capabilities to program movements of all five points simultaneously. For the purposes of automation, each point is represented by two parameters, one for horizontal position (length) and one for vertical position (width).

In addition to the original and model plots, when THROAT is processing audio the display will also contain real-time representations of the original and modeled throat contours. As with the plots, the blue contour is the original throat and the red contour is the model throat.

As you begin to get familiar with the Throat Shaping display, trial-and-error will no doubt be the first order of the day. However, with a little experience, you will soon be able to predict what effect a particular plot adjustment will

have. Checking out the factory presets, with a particular eye towards model plot shapes, should help you on your way.

### Reset

Clicking the Reset button cancels any custom contour you have programmed, but retains any global Stretch and Width settings set by the Model Throat Length and Width controls. To reset those controls, Command (Mac)/Control (PC) click them to set them to their default values.

### Output Gain

This control lets you adjust the output level of the modeled vocal over a range of +/- 24 dB. As you will discover, some models result in substantial level changes. This control is used to bring them back up or down to the desired level.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0 dB.

### Level Matching

As mentioned above, some model settings result in substantial level changes. The Level Matching function attempts to compensate for level differences between the original and processed versions by automatically applying gain adjustments to the modeled version.



**Very Important Note:** *This function is provided for ease of A/B comparisons with the original vocal. It inserts some processing into the modeled vocal path that can have a very small but nonetheless real effect on the overall audio quality. Once you have a model you like, turn the Level Matching function Off and use the Output Gain to adjust the proper level.*

Click the Level Matching button to toggle its state. The button will display On or Off as appropriate.

### Bypass

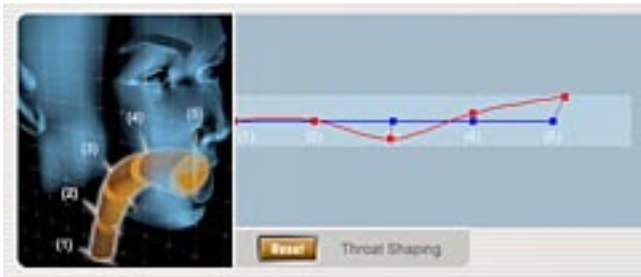
This control is used to (you guessed it) bypass the plug-in. It has been designed to provide artifact-free bypass switching so that you can use it to seamlessly enable THROAT only where desired on a track.

Click the Bypass button to toggle its state. The button will display On or Off as appropriate. Keep in mind that “On” means that the Bypass function is on, i.e., the plug-in is bypassed.

### Usage Tips

- THROAT is a monophonic processor.
- For best modeling performance, THROAT needs to be able to detect the pitch of the original performance. To do that, THROAT requires a clean, pitched, monophonic signal. If THROAT can not reliably detect the pitch of the input, either because of a noisy or effected signal or because the input is not a single monophonic voice, it will not fail, but will fall back to an alternative (but not quite as accurate) modeling method.
- As has been mentioned several times already, for natural, “realistic” results, always start with relatively small adjustments to the various throat modeling controls, whether the Length and Width sliders, or the Graphic Display control points.

The actual range of variation in human anatomy is quite small relative to the overall range offered by THROAT. When you’re first getting started, try limiting control changes to around +/- 15%. As you get a feeling for the effect of various settings, slowly increase the ranges until things start sounding weird (not that that’s necessarily a bad thing).



- If you just want to start playing, try the following brief tutorial.

Start by assigning THROAT to a vocal part and set the above contour on the Throat Shaping display:

Be sure you have set the proper Vocal Range and Source Glottal settings and leave all the other controls at their default values.

Now, while listening to your vocal, slowly move the Model Throat Length slider from 1.00 to 1.25. Note the effect. Depending, of course, on the source vocal, you might typically hear the vocal quality become subtly darker, more male, older, etc.

Then try moving it back to 0.75. Again note the effect. In this case the result might be subtly more bright, female, young, etc.

Next, return the Model Throat Length slider to 1.00 and repeat the above with the Model Throat Width.

Finally, experiment with various combinations of the two controls. As you become familiar with their effects, try more extreme settings of the controls.

- Speaking of weird, it may be useful to understand just why extreme models are perceived as “unrealistic” or strange.

As mentioned above, the range of human vocal anatomy is actually relatively small. In order that we can differentiate between the voices of the many people we encounter in our lives, the auditory processing function in our brains is extremely sensitive to very small differences in vocal timbre within the typical range of variation. But as a result of this, we have no frame of reference for vocal timbres that fall outside of the range of common human anatomy. We can't picture the person who would sound like that. So we think more in terms of “filtered,” “tubular,” or whatever. Trust us, if there were people with vocal tracts of the more extreme dimensions THROAT is capable of, this is what they'd sound like.

- While THROAT has been designed for voice, experiments here have shown that it can produce quite striking effects when used on other instrumental tracks. Try it with drums, guitars, bass, in fact pretty much anything. (In particular, applying it to a drum loop and then following that up with PUNCH has resulted in some truly twisted beats. Give it a try.)
- Play, play, play.

## A Few Words About the THROAT Factory Presets

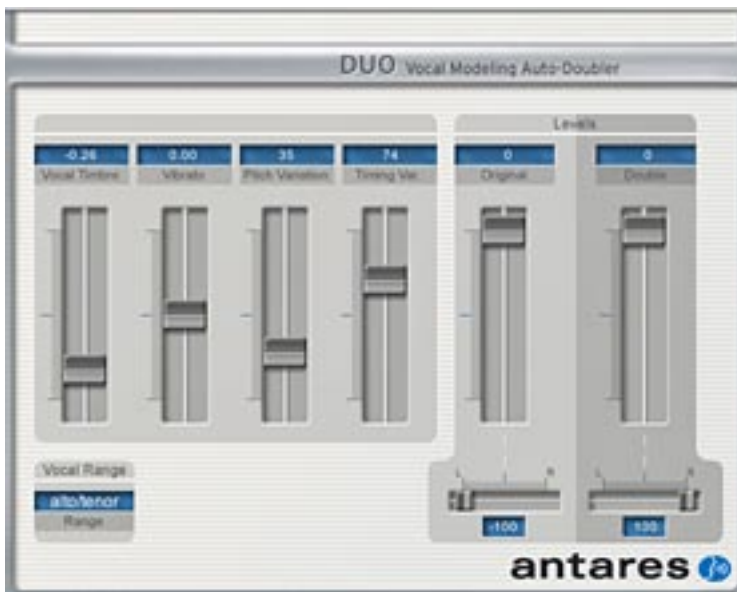
Unlike synth presets, which will always sound the same for all users, the THROAT presets are heavily dependent on the vocal tracks that you use them on. Consequently, they serve primarily as starting points for various general effects, with the expectation that you will tweak them to work best with your particular audio.

Specifically, they all contain the default settings for Vocal Range and Source Glottal Waveform controls. After calling up a preset, you should be sure set each of those controls to reflect your track.

Also, although some presets are named to give a general idea of their intent, feel free to experiment with any preset on any source track. There are no rules.



# Chapter 4: DUO Vocal Modeling Auto-Doubler



Matching the appropriate algorithm to the input results in faster and more accurate pitch detection.

To select the desired Vocal Range, click on the Vocal Range pop-up and then select the desired range from the pop-up list.

**Note:** Choosing the wrong Vocal Range (or just forgetting to set it at all) can result in compromised performance. Pay attention.

The DUO Vocal Modeling Auto-Doubler automatically generates a doubled vocal part from any existing monophonic vocal. Unlike conventional doublers that simply apply pitch and delay variation to the original part, DUO makes use of Antares' unique vocal modeling and vibrato processing technologies to create a doubled part that actually sounds like another singer. There is no easier or quicker way to create a realistic doubled vocal part.

## Controls

### Vocal Range

Use this control to select the range of the track you will be processing. Choices include Soprano Voice, Alto/Tenor Voice, Bass/Baritone Voice and Instrument (a general setting for anything that isn't actually a vocal).

### Vocal Timbre

Behind this unassuming slider lies a compact version of the THROAT vocal modeler. When this control is set to 0, the doubled voice will have exactly the same character as the original voice. As you move the slider up or down, DUO sends the doubled voice through a progressively more extreme vocal model. I.e., near 0, the timbre is very close to the original voice. As the control approaches .40 or -.40, the vocal timbre undergoes a fairly radical change.

As you might imagine, this slider simultaneously controls a number of vocal modeling parameters. We've linked them together to give you quick and easy access to a range of useful timbres.

Although the exact effect of any setting will depend a good deal on the vocal being processed, in general:

- Selecting a positive value will result in a lengthening of the vocal tract and hence an older/darker/more male vocal quality.
- Selecting a negative value will result in a shortening of the vocal tract and hence a younger/brighter/more female vocal quality.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0.

### Vibrato

The Vibrato control allows you to select the amount of variation in vibrato depth applied to the doubled voice.

Selecting a positive value increases the doubled voice's vibrato depth relative to the original voice.

Selecting a negative value decreases the doubled voice's vibrato depth relative to the original voice.



**Important Note:** *Unlike vibrato controls on most vocal processors, this function does not simply use an LFO to apply a synthesized vibrato. DUO actually analyses the original vocal part to identify its vibrato and modify its depth. As a result, the modified vibrato will still reflect the overall contour of the original vibrato. As an additional consequence however, the Vibrato control will only have affect if the original vocal contains vibrato. It will not add vibrato to a performance that does not originally have it.*

The Vibrato control may be used by itself to modify the vibrato of a performance. See the Usage Tips below for details.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0.

### Pitch Variation

The Pitch Variation control lets you select the amount of random variation in pitch applied to the doubled voice. The higher the value, the larger the maximum amount of allowable variation.

Command (Mac)/Control (PC) click the control to reset it to its default value of 10.

### Timing Variation

The Timing Variation control lets you select the amount of random variation in timing applied to the doubled voice. The higher the value, the larger the maximum amount of allowable variation.

DUO's timing variation is completely independent of pitch variation. To get a good idea of the effect of timing variation, use the level controls to listen only to the doubled voice. set Vibrato to 0 and Pitch Variation to 10. Set Timing Variation to maximum and process a rhythmic vocal performance. Pretty weird.

Command (Mac)/Control (PC) click the control to reset it to its default value of 10.

### Original Level

Sets the level of the original voice.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0.

### Original Pan Position

Sets the original voice's location in the stereo spectrum. This control only functions in Stereo or Mono-> Stereo modes.

Command (Mac)/Control (PC) click the control to reset it to its default value of -100 (far left).

### Double Level

Sets the level of the doubled voice.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0.



### Double Pan Position

Sets the doubled voice's location in the stereo spectrum. This control only functions in Stereo or Mono-> Stereo modes.

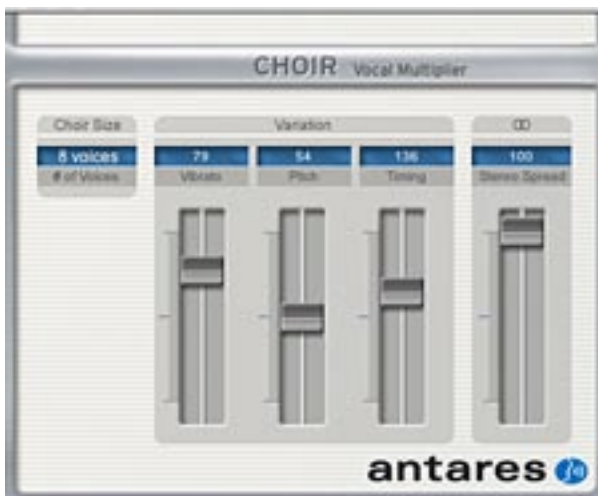
Command (Mac)/Control (PC) click the control to reset it to its default value of 100 (far right).

## Usage Tips

- DUO is available in mono and stereo versions and, depending on the capabilities of your host program, a mono -> stereo version (which in most cases is the preferred routing). In the case of the stereo version, DUO processes only the left channel. DUO is dramatically more effective with the original and doubled parts panned apart, so if at all possible, try always to use it with stereo output.
- For best performance, DUO requires a clean, pitched monophonic signal. If DUO can not reliably detect the pitch of the input, either because of a noisy or effected signal or because the input is not a single monophonic voice, it will apply Vocal Timbre and Timing variations only.
- Experiment with various Pitch and Timing settings. Different combinations can result in distinctly different stylistic effects.
- DUO's Vibrato function can be used by itself to modify the vibrato depth on a recorded track. If you have a track with too deep a vibrato (or too shallow, although that's a much rarer problem), assign DUO to the track and set the mixer so that only the doubled track is heard. Set Vocal Timbre to 0 and Pitch and Timing to their minimum values. While listening to the track, adjust the Vibrato slider to reduce or expand the vibrato depth as desired. Notice that while you are modifying the vibrato depth, the expressive contour of the singer's original vibrato is retained.



# Chapter 5: CHOIR Vocal Multiplier



**C**HOIR is a unique processor that turns a single monophonic voice into 4, 8, 16, or 32 distinct individual unison voices, each with its own pitch, timing and vibrato variations. The voices can, if desired, be spread across the stereo spectrum. When multiple instances of CHOIR are assigned to individual harmony parts, the result is an amazingly realistic large vocal ensemble.

## Controls

### Choir Size

This control allows you to select the number of individual voices that will be generated from the original voice. Choices are 4, 8, 16, and 32 voices.

### Vibrato Variation

The Vibrato control allows you to select the range of variation in vibrato depth applied to the generated voices. Each voice is individually

assigned a vibrato variation relative to the original voice. The higher the value of this control, the greater the possible vibrato variation.

Command (Mac)/Control (PC) click the control to reset it to its default value of 30.

### Pitch Variation

The Pitch Variation control lets you select the range of the random variation in pitch applied to each generated voice. Each voice is individually assigned a pitch variation relative to the original voice. The higher the value of this control, the larger the maximum amount of allowable variation.

Command (Mac)/Control (PC) click the control to reset it to its default value of 30.

### Timing Variation

The Timing Variation control lets you select the range of the random variation in timing applied to each generated voice. Each voice is individually assigned a timing variation relative to the original voice. The higher the value of this control, the larger the maximum amount of allowable variation.

Command (Mac)/Control (PC) click the control to reset it to its default value of 100.

### Stereo Spread

This control selects the extent to which the generated voices are spread across the stereo spectrum. At a setting of 0, all of the voices

appear in the center of the stereo soundstage. As the value is increased, the voices spread out from the center until, at the maximum value, they appear across the entire stereo soundstage.

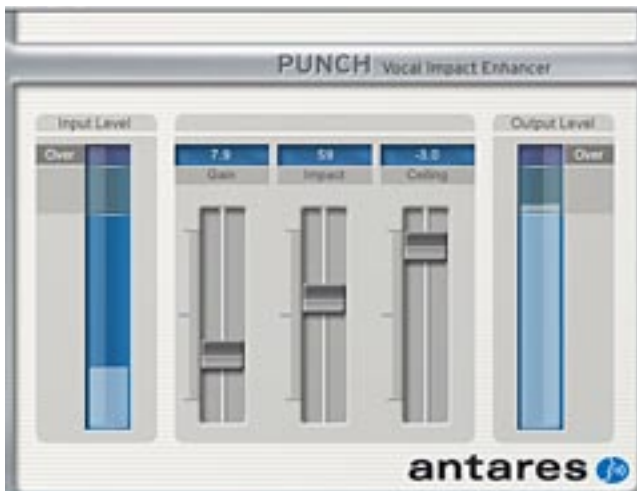
This control only functions in Stereo or Mono->Stereo modes.

Command (Mac)/Control (PC) click the control to reset it to its default value of 100.

## Usage Tips

- CHOIR is available in mono and stereo versions and, depending on the capabilities of your host program, a mono -> stereo version (which in most cases is the preferred routing). In the case of the stereo version, CHOIR processes only the left channel. CHOIR is dramatically more effective with the voices panned across the stereo spectrum, so if at all possible, try always to use it with stereo output.
- The real power of CHOIR comes not as a processor for one voice, but as a processor to assign to each of a number of harmony parts. Even if you have only one singer, have them overdub the basic harmony parts and then process those parts through THROAT to give each the character of different voices. Then assign an instance of CHOIR to each of those parts and create your vocal ensemble.
- Alternatively, create harmony parts by processing a single vocal part through a harmonizer and then assigning each individual harmonizer output to an instance of CHOIR.
- Keep in mind that the greater the number of voices, the greater the CPU usage. If you will be using multiple instances of CHOIR, it might be wise to limit each instance to 4 or 8 voices.
- Along those same lines, even if you have tons of CPU power, more is not always better. Match the choir size to the style of your music. Not every song needs the Mormon Tabernacle Choir.
- Experiment with different combinations of the Pitch and Timing controls. They can create dramatically different vocal ensembles. With Timing at its minimum and substantial Pitch Variation, you have a choir that's rhythmically tight but a bit loose with intonation. Conversely, reversing those settings gives you a group that's solidly in tune, but rhythmically loose. And there are of course many variations in between. Match the performance style to the style of your music.
- For best performance, CHOIR requires a clean, pitched monophonic signal. If CHOIR can not reliably detect the pitch of the input, either because of a noisy or effected signal or because the input is not a single monophonic voice, it will apply Timing variations only.

# Chapter 6: PUNCH Vocal Impact Enhancer




**P**UNCH is a processor that is designed to optimize the level of a vocal track to allow it to cut through a dense mix with power and clarity. It provides a combination of compression, gain, limiting, and overload protection with a user interface designed for speed and simplicity.

## Controls

### Input Level

This meter displays the input level of the signal to be processed.

 **Note:** This display is for reference purposes only. None of the following controls affect the input level. The result of all processing will be reflected on the Output Level display described below.

### Gain

This control allows you to increase the gain of

your vocal. It will typically be set in combination with the Impact control below.

The effect of this control will be reflected on the Output Level display.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0.0.

### Impact

This control lets you select the amount of “punch” that is added to the vocal. As you increase the value of this control, level variations in the vocal performance are equalized and their level raised. The effect of the control will be reflected on the Output Level display.

Command (Mac)/Control (PC) click the control to reset it to its default value of 0.

### Ceiling

This control allows you to attenuate the signal after all other processing.

Although PUNCH allows you to create a full-level signal without risk of ugly distortion, it will usually be wise to apply at least a little attenuation here to allow yourself some room for any further processing that might apply gain. The default setting of -3.0 dB is a good starting point, and you can always come back and add in more if necessary as you continue processing and the mix takes shape.

Command (Mac)/Control (PC) click the control to reset it to its default value of -3.0 dB.

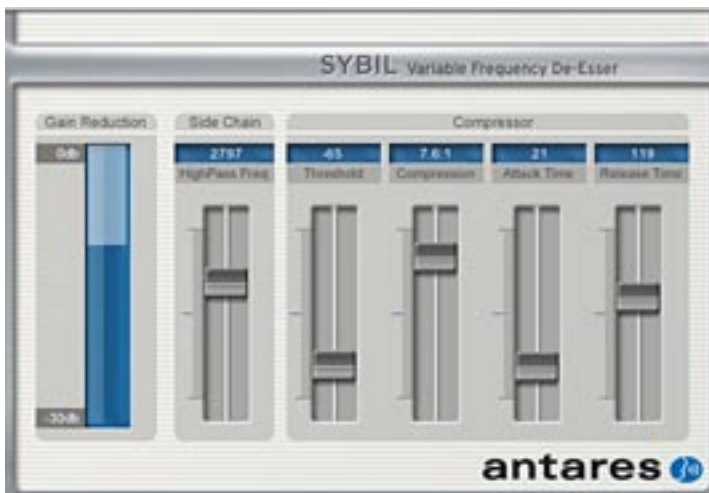
### **Output Level**

This meter displays the level of the signal after all processing by PUNCH. The Gain, Impact, and Ceiling controls should be set in combination such that no clipping occurs.

## **Usage Tips**

- PUNCH is available in mono and stereo versions.
- Since the point of PUNCH is to optimize the impact of your vocal track in the mix, it makes sense to set the controls while listening to the track in the context of the entire mix.
- Every vocal performance is unique. Finding the optimum settings for PUNCH is very much a matter of experimentation. Luckily there are only two controls that really matter, so the prospect is not exactly daunting.
- The Impact control has been purposely designed with a wide enough range to produce some pretty odd effects at its extreme. If you're looking for that sort of thing, check it out.
- While PUNCH has been designed for the voice, it can perform its magic effectively on pretty much any recorded part. It will even do interesting things to entire recorded mixes. Check it out.

# Chapter 7: SYBIL Variable Frequency De-Esser



The diagram below shows how a compressor and a high pass filter are traditionally configured to accomplish de-essing.

SYBIL uses a digital algorithm to implement the de-esser function. While the details of the algorithm are quite complex, the resulting effect is functionally equivalent to the diagram below.

## Controls

### Gain Reduction Meter

The Gain Reduction Meter

displays the amount of compression taking place. If the frequency and threshold controls are set properly, the meter will display little gain reduction during vowel sounds and soft consonants, and substantial gain reduction during sibilants. For this reason, the meter is a useful tool when setting the other controls.

### High Pass Frequency

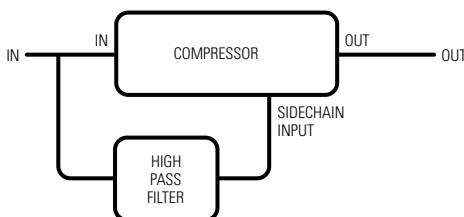
This control sets the frequency of SYBIL's side-chain high pass filter. The goal is to set the frequency such that the filter passes any sibilance (thereby keying the compressor), but not any of the desired signal.

Command (Mac)/Control (PC) click the control to reset it to its default value of 8000 Hz.

### Threshold

This control sets the threshold level of SYBIL's compressor. The range is from 0 dB to -80 dB.

**S**YBIL is a digital equivalent of a traditional vocal de-esser. When recording spoken or sung material, the sibilant sounds (Ss, Ts, CHs, and SHs) in the track sometimes (depending on the individual performer) appear louder than the rest of the signal. The effect can sound unnatural and often irritating. The solution to this problem is to compress only the sibilants, thereby lowering their level relative to the rest of the track. Processing a signal this way is called de-essing.



In most cases, the default value of -48 dB is a good place to start.

Command (Mac)/Control (PC) click the control to reset it to its default value of -48 dB.

### **Compression**

This control sets the compression ratio of SYBIL's compressor. The range is from 1.0:1 to 99:1. In most cases, the default value of 2.4:1 is a good place to start.

Command (Mac)/Control (PC) click the control to reset it to its default value of 2.4:1.

### **Attack Time**

This control adjusts the speed with which SYBIL's compressor responds to peaks in the signal coming from the high pass filter. The range of the control is from 3 milliseconds to 100 milliseconds.

Command (Mac)/Control (PC) click the control to reset it to its default value of 10 milliseconds.

### **Release Time**

This control adjusts the time it takes the compressor's gain to increase 6 dB after the signal coming from the high pass filter drops below the threshold. The range of the control is from 3 milliseconds to 200 milliseconds.

Command (Mac)/Control (PC) click the control to reset it to its default value of 20 milliseconds.

## **Usage Tips**

- SYBIL functions solely as a mono processor.
- If the high pass frequency is set too low, non-sibilant components of the signal will be compressed and the vocal will have its highs attenuated. If it is set too high, some sibilance will still remain. The trick is to find that ideal point where only the sibilance is affected. When set correctly, you can't tell that there is processing going on. If you can hear something happening, SYBIL needs to have its settings tweaked.



# Index

## A

- Authorizing AVOX 4
- AVOX Overview 5
  - CHOIR 5
  - DUO 5
  - PUNCH 5
  - SYBIL 6
  - THROAT 5

## C

- CHOIR 21
  - Choir Size 21
  - Controls 21
  - Pitch Variation 21
  - Stereo Spread 21
  - Timing Variation 21
  - Usage Tips 22
  - Vibrato Variation 21
- contact info ii

## D

- DUO 17
  - Controls 17
  - Double Level 18
  - Double Pan Position 19
  - Original Level 18
  - Original Pan Position 18
  - Pitch Variation 18
  - Timing Variation 18
  - Usage Tips 19
  - Vibrato 18
  - Vocal Range 17
  - Vocal Timbre 17

## I

- Installing AVOX 3

## L

- License Agreement iii

## P

- Processing Guidelines 6
- PUNCH 23
  - Ceiling 23
  - Controls 23
  - Impact 23
  - Input Level 23
  - Output Level 24
  - Usage Tips 24

## S

- SYBIL 25
  - Attack Time 26
  - Compression 26
  - Controls 25
  - Gain Reduction Meter 25
  - High Pass Frequency 25
  - Release Time 26
  - Threshold 25
  - Usage Tips 26

# T

Technical Support 1

THROAT 7

Breathiness Frequency 9

Breathiness Mix 9

Bypass 13

Controls 8

Factory Presets 15

Glottal Pulse Width 10

Glottal Voice Type 11

Graphic Throat Display 11

Level Matching 13

Model Glottal Waveform 10

Model Throat Length 10

Model Throat Width 10

Output Gain 13

Reset 13

Source Glottal Waveform 8

Source Throat Precision 9

Tutorial 14

Usage Tips 13

Vocal Range 8

# W

Welcome 1





the  
worldwide  
standard in  
vocal  
processing  
tools

**antares** 

FOR ALL THE VOICES IN YOUR HEAD

[www.antarestech.com](http://www.antarestech.com)